

ANALYSIS OF GREEN BUILDING PROGRAMS APPENDICES

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APPENDIX A STATE GOVERNMENT GREEN BUILDING INITIATIVES

APPENDIX A: STATE GOVERNMENT GREEN BUILDING INITIATIVES

State	Description	Established By	Date	Sector Focus	Comments
Arizona	All new state-funded buildings, including schools, are to be built to USGBC LEED Silver standards.	Executive Order	February 2005	Public	State-funded projects must also incorporate renewable energy.
Arkansas	All state agencies are to use green design strategies, and a green building task force will also be established. Agencies must refer to a LEED "plus" or Arkansas Green Globe standard.	Legislation	July 2005	Public	Legislation may have not be signed into law yet.
California	State-run entities are required to purchase Energy-Star equipment, seek-out leases in Energy-Star rated buildings, and design, construct and operate all new and renovated state-owned and state-funded buildings to meet LEED Silver certification. Separately, the state helped to found the Collaborative for High Performance Schools.	Executive Orders	August 2000 December 2004	Public	Both new construction and significant renovations are addressed by the 2004 Executive Order.
Colorado	Promotes use of LEED standards in state-funded construction to the extent feasible, and calls for the creation of an energy management program.	Executive Order	July 2005	Public	Both new construction and significant renovations are addressed by the Executive Order.
Illinois	Illinois Capital Development Board charged with convening an advisory group to develop a set of policy and program recommendations to expand green building practices in state construction and renovation projects.	Executive Order	December 2001	Public	It does not appear that an ICDB advisory group completed the task of developing a set of recommendations.

APPENDIX A: STATE GOVERNMENT GREEN BUILDING INITIATIVES

State	Description	Established By	Date	Sector Focus	Comments
Maine	Directs state officials to consider LEED guidelines for all new or renovated state buildings provided that standards can be met on a cost-effective basis.	Executive Order	February 2003	Public	
Maryland	Maryland Green Building Program called for LEED certification of all capital projects greater than 5,000 gs. Maryland also offers a Green Building Tax Credit for commercial construction. More recently, the House and Senate passed legislation requiring a green building standard be applied to state-funded projects.	Executive Order Legislation	October 2001 April 2005	Public and Private Public	Web research suggests that public construction program established in 2001 is not currently active.
Michigan	Department of Management and Budget (DMB) is directed to reduce energy use in all state-owned and operated buildings 10 percent by December 31, 2008. LEED standards are required for all new state agency, public university, and community college buildings (when costs exceed \$1M), but certification is not required.	Executive Order	April 2005	Public	
Minnesota	Requires development and implementation of sustainable building design guidelines (including both requirements and recommendations) for all new state buildings.	Legislation	Guidelines completed in 2003	Public and Private	Guidelines are part of a broader "sustainable building" program aimed at providing communities with resources to achieve social and environmental objectives.
Nevada	All state-funded projects are required to meet LEED standards. Allows abatement of up to 50 percent of property taxes for a period of up to 10 years on all buildings that meet the LEED Silver standard.	Legislation	June 2005	Public and Private	

APPENDIX A: STATE GOVERNMENT GREEN BUILDING INITIATIVES

State	Description	Established By	Date	Sector Focus	Comments
New Hampshire	New construction or renovation of state buildings must exceed state energy code by 20 percent and include energy modeling during the design process.	Executive Order	July 2005	Public	
New Jersey	All new school designs are required to incorporate LEED guidelines. New Jersey Green Homes Office aims to accelerate the use of innovative green design and building technologies; raise building standards; and create a consumer demand for efficient and environmentally responsible high performance homes through advocacy, education, and technical assistance.	Executive Order (schools program)	July 2002	Public and Private	
New York	State projects involving new construction are encouraged but not required to seek LEED certification. Twenty percent improvement in energy efficiency performance relative to levels is required by the Energy Conservation Construction Code required for all new buildings; ten percent improvement is required for substantial renovations. Tax incentive is available to commercial developments incorporating specific green strategies informed by LEED.	Executive Order	June 2001	Public and Private	
North Carolina	The Department of Environment and Natural Resources is expected, to the extent feasible, to take real and permanent steps to integrate sustainable and green building practices for projects in capital construction, facility renovation, facility leasing, land development, landscaping, and facility purchases.	Policy	March 2004	Public	

APPENDIX A: STATE GOVERNMENT GREEN BUILDING INITIATIVES

State	Description	Established By	Date	Sector Focus	Comments
Oregon	<p>State Energy Efficiency Design program directs state agencies to ensure that cost-effective energy conservation measures are included in new and renovated public buildings. Since July 1, 2001 all new state facilities must exceed the energy conservation provisions of the Oregon State building code by at least 20 percent.</p> <p>High Performance School Program offers up to \$50,000 per project for the up-front costs to design a school building that will achieve the highest level of energy and resource efficiency while providing improved comfort and a healthy environment for students and staff.</p> <p>Oregonians who build a sustainable commercial building are eligible for a tax credit based on the LEED certification level achieved.</p>	Legislation	<p>1991</p> <p>2001</p>	Public and Private	
Pennsylvania	Green Government Council's Green Building Program provides Energy Savings Performance Contracting for Pennsylvania agencies, school districts, local government agencies and other public buildings. The program also provides a set of Model Green Office Leasing Specifications and promotes the LEED rating system.	Executive Order	December 1998	Public	
Rhode Island	State-funded construction, including public colleges and universities, will be built to LEED Silver. Projects shall incorporate energy efficiency measures based on lifecycle costing.	Executive Order	August 2005	Public	New construction and significant renovations and expansions are addressed by the Executive Order.

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State	Description	Established By	Date	Sector Focus	Comments
South Carolina	The South Carolina Energy Efficiency Office created the Public Building Solar Initiative to demonstrate the technical and economic efficiency of solar water heating in public facilities. The program awards grants to state agencies, colleges and universities, public school districts, local governments and non-profit organizations for 75 percent of the cost of designing and installing a solar water heating system and purchasing a five-year service contract.		First grant round in April 2004	Public	
Washington	<p>New state agency and higher education buildings 5,000 square feet and larger, as well as significant remodels, are required to achieve LEED Silver certification.</p> <p>The Department of General Administration provides green building services, including education, goal setting workshops, consultant selection, design input, design review, research, and construction review, to state agencies, state colleges and universities, K-12 school districts, and local governments.</p>	Legislation	April 2005	Public	

APPENDIX B SUMMARIES OF SELECTED STATE GREEN BUILDING PROGRAMS

ARIZONA

Administrating Agency: Department of Commerce, Energy Office, and the Department of Environmental Quality (DEQ) **Program Website:** N/A

Contact: Jim Wesdberg, Department of Commerce, Energy Office (602) 771-1145

Authority Executive Order 2005-05 passed February 11, 2005, *Implementing Renewable Energy and Energy Efficiency in New State Buildings* directs that to the extent practicable, all new state funded buildings, including schools, should be built to USGBC LEED Silver standards.

Several factors contributed to the Governor's Executive Order. The advocacy efforts of the Arizona chapter of the USGBC as well as individual Arizona cities that have adopted green building policies played an important role in the development of the Executive Order. The Governor was also likely influenced by other green building proponents during meetings of the Western Governors' Association, of which Arizona is a part. Additionally, the DEQ's completion of its LEED-certified headquarters building also helped demonstrate the energy savings that can be achieved through green building.

Description Implementation of the Executive Order is the responsibility of each individual state agency, though the Energy Office and the DEQ lend their expertise to other agency projects.

Elements Education: The Department of Environmental Quality and the Department of Commerce's Energy Office both offer presentations to educate state agencies and schools about green building. The Energy Office presents a power point presentation developed by the USGBC at the request of various state agencies, while the DEQ addresses school planners using materials developed by the California High Performance Schools program.

State Employee LEED Accreditation: Several state agencies are appointing one or two staff members to become LEED accredited by the USGBC in order to promote and facilitate green building practices within the agency.

Standards Construction of new state-funded buildings must adopt, to the extent practicable, LEED Silver standards.

Agencies Involved The Executive Order applies to all state agencies.

State Construction (unknown)

Budget (unknown)

Achievements There has been no new construction of state buildings since the Executive Order was signed in February 2005. Prior to the Governor's Executive Order, however, the DEQ independently pursued LEED certification in the construction of its headquarters building. It is estimated that DEQ saves \$90,000 annually as a result of the building's energy efficient design.

CALIFORNIA

Administrating Agency: California Integrated Waste Management Board (CIWMB)
Program Website: www.ciwmb.ca.gov/GreenBuilding/
Contact: Dana Papke, (916) 341-6496

Authority On August 2, 2000, the Governor signed Executive Order D-16-00, which required green design in state buildings. Executive Order S-20-04 was signed on December 14, 2004 and renews the State of California's commitment to sustainable building design by requiring LEED Silver certification for new and renovated state buildings.

Description The first Executive Order prompted the formation of the Sustainable Building Task Force, an interagency partnership comprising representatives from various state departments with specific fiscal, construction, and environmental policy expertise. Currently, a Green Action Team coordinates the implementation the state's green building program by numerous agencies.

Elements Action Plan: The Task Force developed *Building Better Buildings: A Blueprint for Sustainable State Facilities* which recommends a course of action to achieve the Governor's goal and includes a set of action items and timetables designed to green state construction. The blueprint was updated in 2003 with accomplishments to date; the current *Green Action Building Plan* contains actions for implementing the current Executive Order, including LEED Silver implementation.

Schools: Organized in 2000, the Collaborative for High Performance Schools (CHPS) is a partnership between the state's utilities, local government, the private sector, state agencies, and nonprofits to improve the design and construction of California's K-12 schools. CHPS has developed a three volume *High Performance Schools Best Practices Manual* to assist California school administrators, architects, and engineers in planning, designing, and building schools that are healthy, well-lit and energy efficient, and resource efficient. The collaborative recently finalized a set of design criteria for schools to self-certify that they have achieved High Performance School status.

Education: The Sustainable Building program has primarily focused its education efforts on construction waste management and building material selection related to state construction and public school construction. Other activities within the education program include partnering with higher education institutions to integrate sustainable design into the educational curriculum, conducting guest lectures on sustainable design, making lunch time presentations, participating on conference panels, and maintaining a sustainable design educational display booth that can be displayed at trade shows and conferences.

Funding: The CIWMB provides funding opportunities to state and local government agencies that are interested in promoting the concept of sustainable building. In the past, funding was made available in the form of competitive grants and contracts to local government and state agencies, in a more holistic whole building approach, to assist in the advancement and use of green building design and construction practices and techniques in California. Funding opportunities are currently more limited, reflecting the maturity of the program.

Cost Analysis: In October 2003, the Sustainable Building Task Force completed a comprehensive economic analysis of green building titled *The Costs and Financial Benefits of Green Building*. The analysis demonstrates that green building is cost-

effective. The data from this report are national in scope and conclusions are broadly applicable to all types of buildings.

Standards Three green building performance standards, the Leadership in Energy and Environmental Design (LEED) Rating System, the Collaborative for High Performance Schools (CHPS) design criteria, and the Labs for the 21st Century Environmental Performance Criteria, currently set the standards for California's green building efforts. All state-owned and state-funded buildings are required to meet the LEED Silver certification. K-12 schools may voluntarily certify as High Performance Schools under the CHPS design criteria. The state is working with the UC higher education system to promote the incorporation of the Labs 21 Performance Criteria, which guide the construction of sustainable laboratory facilities.

Agencies Involved

1. Business, Transportation, and Housing Agency
Department of Housing and Community Development
Department of Transportation
2. California Public Employees' Retirement System
3. Department of Finance
4. Environmental Protection Agency
*California Integrated Waste Management Board **
Air Resources Board
Cal/EPA Building
Department of Pesticide Regulation
Department of Toxic Substances Control
Office of Environmental Health Hazard Assessment
State Water Resources Control Board
5. Health and Human Services Agency
Department of Health Services
6. Office of Planning and Research
7. Resources Agency
California Energy Commission
Department of Forestry and Fire Protection
Department of Parks and Recreation
Department of Water Resources
Office of Historic Preservation
8. State and Consumer Services Agency
*Department of General Services**
California Power Authority
Division of the State Architect
Real Estate Services Division
Building and Property Management Branch
Procurement Division
Office of Public School Construction
9. Youth and Adult Correctional Agency
California Youth Authority
Department of Corrections
10. State Treasurers Office
11. California Department of Education

(* Denotes major implementing agency.)

Construction Budget The State of California invests over \$2.5 billion annually in the design, construction and renovation of state facilities.¹

Achievements In the first two years of the program, over \$2 billion of state construction and renovation contracts included sustainable building performance criteria.

The state completed the first LEED Gold state-owned office building in the country, the Education Headquarters Building, which is saving taxpayers \$500,000 a year in energy costs alone.

An acre (50,000 square feet) of photovoltaic panels, the largest rooftop array on any state building, at the Franchise Tax Board Butterfield State Office Building, supplies nearly a half a megawatt (470 kWp) of electricity. This is enough electricity to power more than 400 homes in the Sacramento area.

¹ California Sustainable Building Task Force, *Building Better Buildings: A Blueprint for Sustainable State Facilities*, December 2001.

MICHIGAN

Administrating Agency: Department of Environmental Quality (DEQ)
Program Website: <http://www.michigan.gov/deqconstruction>
Contact: Maggie Fields, (517) 335-6250

Authority Executive Directive No. 2005-4 signed April 28, 2005 directs the Department of Management and Budget (DMB) to reduce energy use in all state-owned and operated buildings 10 percent by December 31, 2008. The Executive Directive requires that state-supported capital outlay projects over \$1,000,000 be constructed to LEED standards, including new buildings for state agencies, universities, and community colleges.

The Governor's Executive Directive grew out of an informal Department of Environmental Quality (DEQ) initiative to demonstrate the potential cost savings that can be realized by making state agency operations more sustainable. Under this initiative, the DEQ conducted energy audits of several state buildings and reported the potential energy efficiency savings to the Department of Management and Budget. At many of the buildings, the payback periods for energy efficiency improvements were so short and the possible savings so great that the Governor's Executive Directive was largely a financial consideration.

Description The Executive Directive focuses on improving energy efficiency and is being implemented (at least initially) through the rewriting of lease specifications to reduce energy use in state buildings. The new specifications also address other sustainability practices through incorporation of LEED standards.

Elements Lease Specifications: Under the Governor's Executive Directive, individual state agencies have begun rewriting their lease specifications to incorporate LEED standards. Each agency is responsible for its own lease specifications.

Information Resources: The DEQ maintains a website with information to facilitate green building and deconstruction activities in Michigan.

Standards Michigan requires that state buildings be constructed to LEED standards, but it does not require LEED certification.

Agencies Involved The Executive Directive applies to all state agencies. All agencies must update their building or leasing specifications to require compliance with LEED standards.

State Construction Budget Michigan's annual budget for new construction is small since approximately 95 percent of state buildings are leased.

Achievements Two state-leased buildings have been constructed to LEED standards under Michigan's green building program. The state has not yet conducted a benchmark study to document performance measures in these buildings.

MINNESOTA

Adminstrating Agency: Office of Environmental Assistance (OEA)
Program Website: <http://www.moea.state.mn.us/greenbuilding/index.cfm>
Contact: Laura Millberg, (651) 215-0219

Authority Legislative: In the 2001 Energy Security and Reliability Act, the Minnesota Legislature required the Departments of Administration and Commerce, with the assistance of other agencies, to develop sustainable building design guidelines for all new state buildings by January 15, 2003. Once established the guidelines are mandatory for all new buildings receiving state bond funding after January 1, 2004. The Energy Security and Reliability Act also required the Department of Administration to maintain information on energy use in all public buildings in order to establish energy efficiency benchmarks and conservation goals.

Executive: Beginning in the 2002 Legislative session, the Governor's Office of Administration required that state agency capital budget requests comply with the *Minnesota Sustainable Building Guidelines*.

Description Minnesota's Sustainable Building Program began in 1997 when the OEA released a *Sustainable Design Guide* (which is being replaced by the *Minnesota Sustainable Building Guidelines*). The OEA uses partnerships, education/training, technical assistance efforts, informational resources, grants, and recognition awards to work with building professionals, Minnesota communities, state agencies, businesses, and citizens to implement sustainable building practices throughout Minnesota. These efforts have expanded green building expertise and created important new tools, specific to Minnesota.

Elements Grants: OEA environmental assistance grants fund projects that make it easier for Minnesota communities, building professionals, and state agencies to implement sustainable building. OEA funds three types of activities that develop different aspects of its program: information resources, innovative products and services, and pilot projects.

Training: OEA partners with other organizations—including local chapters of the U.S. Green Building Council (USGBC), the American Institute of Architects (AIA), and the National Association of the Remodeling Industry (NARI)—to offer education and training for building professionals.

Information Resources: OEA's sustainable building web site has a wealth of Minnesota-specific sustainable building information to assist all organizations seeking state bond funds to implement sustainable building. This includes an online database of Minnesota sustainable building materials, a directory of Minnesota sustainable building materials retailers, lifecycle assessment tools, and demonstration projects.

Awards: In recent years, the *Governor's Awards for Excellence in Waste and Pollution Prevention* and the *MnGREAT! Awards* have recognized six projects in the public and private sectors specifically for their efforts in sustainable building.

Schools: OEA provides web-based resources to introduce school administrators, facilities staff, and teachers to the spectrum of sustainability options possible within schools, including a tool kit for K-12 schools.

Standards An interdisciplinary consulting team developed the *Minnesota Sustainable Building Guidelines*. The guidelines are designed to be transparent to LEED while reflecting regional values and taking building-specific factors into account. Most of the guidelines are required because they clearly contribute to the desired lifecycle cost, human, community, or environmental outcomes, but some are recommended because the benefits are not sufficiently proven or vary significantly for each building. For recommended guidelines, the design team is required to evaluate their implementation.

Agencies Involved

1. Department of Administration *
2. Department of Commerce
3. Minnesota Planning
4. Department of Natural Resources
5. Pollution Control Agency
6. Department of Finance
7. Office of Environmental Assistance *
8. Minnesota Dept. of Children, Families and Learning

(* Denotes major implementing agency.)

Construction Budget Information not readily available.

Program Achievements OEA technical assistance contributed to sustainable building requirements for three new state buildings opening the fall of 2005. Several other green building projects at the state and local level have been built following the 1997 Design Guide. A study of the progress of 41 high-performance buildings throughout the state estimates \$5.15 million dollars and 55 million Kwh in savings annually, corresponding to a reduction of 55,000 tons of CO₂ and two pounds of mercury annually.² In addition, a preliminary analysis of the three new state buildings being constructed according to the guidelines estimates 5,900 pounds of air pollution (including CO₂, NOx, SOx, and particulates) will be abated annually compared to if the projects were built to code.

² Minnesota has defined "high performance" as buildings operating at 30 percent better than the state energy code, but otherwise not necessarily "green."

NEW JERSEY

Administrating Agency: New Jersey Schools Construction Corporation
New Jersey Green Homes Office

Program Website: www.njscc.com
<http://www.state.nj.us/dca/dh/gho>

Contact: New Jersey Schools Construction Corporation, (609) 943-5955
New Jersey Green Homes Office, Darren Port, (609) 292-3931

Authority Legislative: On July 18, 2000 the New Jersey Educational Facilities Construction and Financing Act (the Act) was signed into law. It is expected to result in the state's investment of \$8.6 billion in public school construction in New Jersey over next decade, including full funding by the state of all school renovation and construction projects in 31 special needs school districts, known as the Abbott school districts.

Executive: Executive Order 24, signed July 29, 2002 created the New Jersey Schools Construction Corporation (SCC), a public agency responsible for implementing the Act and fully responsible for the school construction program. The Executive Order requires all new school designs to incorporate LEED standards.

Description The SCC's green design policy is to incorporate maximum operating efficiencies and new technologies to advance energy efficiency of school facilities. To this end, the SCC conducts brainstorming sessions early in the design process in which all stakeholders meet to plan for green design. A checklist completed by the project architect documents the LEED criteria incorporated and the overall score of the project.

New Jersey's Department of Community Affairs Green Home Office runs the New Jersey Affordable Green Program, which aims to accelerate the use of innovative green design and building technologies in state-funded affordable housing projects through advocacy, education, and technical assistance.

Elements Partnership: SCC has entered into a Memorandum of Agreement with the New Jersey Institute of Technology's (NJIT) Center for Architecture and Building Science to establish the New Jersey High Performance Schools Information Center. It is part of NJIT's mission in this new center to work to establish best practices, especially as they relate to LEED and sustainable design.

Schools: See program description above.

Financial assistance: The Green Homes Office coordinates with DCA's Balanced Housing Program to provide additional grants, up to \$7,500 per unit, to integrate green/high performance features into homes.

Education: The Green Homes Office continually provides various programs, workshops and conferences about the use of green technology in homes and its benefits and costs.

Standards The SCC has adopted LEED version 2.0 as a benchmark for the design, evaluation and construction of SCC managed school facilities projects that involve new construction. Projects must meet all LEED prerequisites and achieve sufficient criteria to score at least 26 points on the LEED rating scale, wherever possible. The SCC does not seek LEED certification of school facilities because documentation costs, registration and certification fees, and the bureaucracy and related time of another third party review of

SCC projects does not justify the need for formal certification through the USGBC. Third party review and verification through an audit process resides with the SCC. The Affordable Green Program has developed its own standards for green public housing through a peer review process.

- Agencies Involved**
1. New Jersey Schools Construction Corporation
 2. Department of Education
 3. Office of Government Integrity
 4. Department of Community Affairs
 - Green Homes Office*
 - Smart Growth Office*
 5. Department of Labor
 6. Department of Treasury
 7. Attorney General
 8. Commerce and Economic Growth Commission
 9. Housing, Mortgage and Finance Agency
 10. Board of Public Utilities
 11. Department of Environmental Protection

Construction Budget It is anticipated that \$8.6 billion will be expended on school construction over the ten-year life of the program.

Achievements The Design of the Community School in Neptune Township is on track to be one of the first LEED rated New Jersey school buildings constructed by SCC, and it will be the type of model energy efficient school encouraged by Executive Order 24. The Green Homes Office has financed hundreds of units that possess an array of energy efficient and green features.

NEW YORK

Administrating Agency: New York State Energy Research and Development Authority (NYSERDA)
Program Website: http://www.nyserda.org/Programs/Green_Buildings
Contact: Craig Kneeland, (518) 862-1090 x3311

Authority Executive Order 111, signed June 10, 2001, establishes that for new buildings or for the renovation of existing buildings, guidelines of the LEED rating system should be met to the greatest extent possible through the design, construction, operation and maintenance phases. A 20 percent improvement in energy efficiency is expected in new building construction, while substantial renovation projects shall achieve at least a 10 percent improvement. The Executive Order identified NYSERDA as the organization responsible for coordinating and assisting state agencies and other affected entities with their responsibilities.

Description NYSERDA, a public benefit corporation created by the New York State Legislature, coordinates the state green building services. Under the New Construction Program, NYSERDA provides technical and financial assistance to state agencies, schools, and private entities to incorporate energy-efficiency measures into the design, construction, and operation of new and substantially renovated buildings.

Elements Technical Assistance: Technical assistance offered by NYSERDA includes: computer modeling; materials analysis; equipment and building commissioning; and identifying durable, cost-effective, energy-efficient products, equipment, and systems that have reduced lifecycle costs and reduced environmental impacts. Technical assistance is offered by NYSERDA on a 50/50 cost-shared basis.

Incentives: NYSERDA administers the System Benefits Charge-funded New York Energy Smart New Construction Program, which offers both capital cost and technical consulting incentives to building owners and leaseholders to improve the energy efficiency and environmental performance of new and existing buildings in the commercial, industrial, and institutional sectors.

Guidelines: Protocols and implementation plans for Executive Order compliance are being developed at the level of individual state agencies. With respect to the green building requirements, approaches range from LEED certification as a standard goal or practice to less aggressive plans that focus simply on "best efforts" to achieve compliance.

Performance Measurement: Measurement of specific progress toward the achievement of Executive Order goals focuses on reductions in energy use. In July 2003, NYSERDA published the first (and to date only) Annual Energy Report. The key metric is an Energy Use Index (EUI) which looks at energy use on a per square foot basis and compares it to a target EUI corresponding to the Governor's goal of a 35 percent reduction from a 1990 baseline by 2010.

Standards New state buildings greater than 20,000 gross square feet are also required to be designed and constructed such that they meet the criteria for LEED certification. Certification is not required.

Agencies Involved The following agencies comprise the Advisory Council, which assists NYSERDA in fulfilling the requirements of Executive Order 111:

1. Division of the Budget
2. Department of Environmental Conservation
3. Department of Correctional Services
4. Office of Mental Health
5. Department of Transportation
6. Public Service Commission
7. New York Power Authority
8. Metropolitan Transportation Authority
9. Dormitory Authority of the State of New York
10. Long Island Power Authority
11. New York State Energy Research and Development Authority
12. Office of General Services

Construction Budget Information not readily available.

Achievements Energy use per square foot has decreased by 8.9% from the baseline for reporting state entities. State entities were able to reduce electric load by approximately 100MW or more than 10% of their load, when ordered to do so within one hour.

An estimated \$52 million in energy costs were avoided in Fiscal Year 2001/2002. This \$52 million in avoided utility costs translates into the retention of 1,625 jobs.

Efficiency improvements in buildings have provided pollution savings of approximately 340 tons of NO_x, 525 tons of SO₂, and 300,000 tons of CO₂.

OREGON

Administrating Agency: Department of Administrative Services (DAS), Facilities Division
Program Website: <http://www.oregon.gov/DAS/FAC/gbindex.shtml>
Contact: Elin Shephard, (503) 378-2865

Authority Executive: In May 2000, the Governor signed an Executive Order promoting sustainability in internal state government operations. The order required the development of a policy for constructing and maintaining sustainable, “green” buildings. The order also directed the DAS to use the North Mall Complex design, construction and maintenance as a pilot project to employ and evaluate sustainability methods and programs.

Legislative: In August 2001, the Oregon State Legislature enacted House Bill 3948 making the adoption of sustainability measures within state government part of state law. This legislation created the Sustainability Board and outlined ten goals that state agencies should follow to incorporate sustainability into their policies and projects.

Legislative: The State Energy Efficiency Design (SEED) program was originally established in 1991 under Oregon State law, ORS 276.900-915. This law directs state agencies to work with the Oregon Department of Energy (DOE) to ensure that cost-effective energy conservation measures are included in new and renovated public buildings. It was revised in 2001 to require that all state facilities constructed on or after June 30, 2001 exceed the energy conservation provisions of the Oregon State building code by 20 percent or more.

Description Oregon’s green building program focuses on providing guidelines and standards for sustainable building. The guidelines and standards are issued by DAS and DOE.

Elements Guidelines: The DAS: (1) issued *Sustainable Facilities Standards and Guidelines* to direct the siting, design, construction, deconstruction, operation and maintenance of state buildings and landscape; and (2) the selection, terms and conditions for state leaseholds.

Demonstration: The DAS completed design and construction of the North Mall Complex as a pilot project demonstrating the implementation of the issued Sustainable Facilities Standards and Guidelines.

Schools: The Oregon High Performance School Program offers technical assistance, best practices research, design guidelines and financing to encourage, support, and ensure that new schools constructed in Oregon over the next few years provide comfort and a healthy environment for students and achieve the highest-level of energy and resource efficiency. The program offers technical assistance and financing to new school planners.

Standards The DAS program promotes the LEED rating system. The guidelines require new construction to meet the point equivalent of LEED Silver rating and major renovations to meet the point equivalent of LEED Certified rating. The Department of Energy requires the SEED standards.

Agencies Involved The DAS and DOE policies apply to all state agencies.

Construction Budget Information not readily available.

Achievements Under the Sustainable Facilities Policy, several state agencies have successfully completed projects incorporating green design features. These include the Department of Corrections, the Department of Forestry, the Department of Human Resources, the Military Department, the Division of State Lands, the Department of Transportation, and the Oregon Youth Authority.

PENNSYLVANIA

Administrating Agency: Department of Environmental Protection and Department of General Services
Program Website: <http://www.gggc.state.pa.us>
Contact: Catherine Brownlee, (717) 772-8924

- Authority** Executive: In March 1998, the Governor signed Executive Order 1998-1, which established the Governor's Green Government Council to facilitate the incorporation of environmentally sustainable practices into state agency operations. This order calls on the Department of General Services to coordinate the efforts of all executive agencies in seeking out ways to improve energy management and conservation in state facilities and to develop no-cost or low-cost energy conservation measures for all state-owned and leased buildings. The Executive Order specifically mentions the use of green building practices as a tool to help achieve this objective.
- Description** In response to the Governor's Executive Order, Pennsylvania established the High Performance Green Building Program to incorporate green design principles into new construction, leasing, and operation and maintenance of state buildings. The program focuses on education, promotion and demonstration of high performance green buildings. In addition, the Guaranteed Energy Savings Performance Contracting Program focuses on incentives in state contracting of energy improvement services. The Governor's Green Government Council coordinates green building activities.
- Elements** Guidelines: The *Commonwealth of Pennsylvania High-Performance Green Building Guidelines* are intended to familiarize decision-makers and others involved in the design, construction and development of communities and buildings with the concept of sustainability. It presents theory and practice, concepts, case studies, and checklists.
- Action Plans: The Executive Order requires the GGGC to compile the annual plans developed by each agency subject to the order and to deliver a single report to the Governor each September. These reports (or "Green Plans") describe, in narrative form, agency accomplishments with respect to one or more "environmental sustainability" issues (the 2005-2006 includes buildings, management, land use, power, procurement, transportation, and recycling).
- Lease Specifications: The program provides a set of *Model Green Office Leasing Specifications*, a comprehensive model specification for sustainable leased buildings. It combines stringent performance standards with specific design strategies.
- Contracting: The Guaranteed Energy Savings Performance Contracting Program allows state agencies to acquire comprehensive capital energy improvements (e.g. lighting, HVAC equipment, controls, etc.) where the energy and cost savings achieved by the installed energy project cover all project costs, including financing, over a specified contract term. To this end, the state provides technical assistance, tax-exempt financing options, project engineering, design, installation and construction management, and guaranteed savings for the life of the contract.
- Standards** The program promotes the LEED rating system as a guide for setting and evaluating design intent and project goals. The Department of Environmental Quality requires all of its leased buildings to achieve LEED Silver, although certification is not required.

- Agencies Involved** The program applies to all state agencies; over 40 agencies are represented on the Governor's Green Government Council implementing the executive order.
- Construction Budget** Information not readily available.
- Achievements** As of August 2005, there are seven LEED certified buildings occupied by state agencies. In addition, at least five public facilities are LEED registered.

APPENDIX C INTERVIEW GUIDE AND QUESTIONS

INTREVIEW GUIDE AND QUESTIONS

Vision and Leadership

- What were the origins of the state program?
 - What person or organization most strongly advocated for the concept of incorporating sustainable design principles into state buildings?
 - Was the concept promoted on its own merits, or in conjunction with broader state objectives (e.g., economic development, smart growth)?
 - What specific objectives, if any, were established?
- What is the scope of the program?
 - Is there a focus on certain types of buildings (e.g., state offices, schools, transportation-related)?
 - Do requirements vary by agency (if different agencies have responsibility for different building types)?
- Is implementation of the program occurring formally or informally?
 - Does a specific state agency have responsibility for coordinating statewide efforts?
 - What resources (budget, staff, office space, etc.) have been dedicated to program implementation? Where does funding come from? What administrative structures exist?
 - Do formal structures or procedures exist to coordinate activities among state agencies?
- How is progress toward objectives being measured?
 - Is annual or other regular reporting required?

Education and Training

- Who is being educated or trained? Why is education of these key stakeholders considered important?
- What methods (e.g., guidance documents, courses, technical assistance) are being used to provide sustainable design education and training to state officials, regulators, and other key stakeholders?
 - Which methods have been the most effective? Least effective?
 - Are common tools and resources shared among all stakeholder agencies and parties or are they being produced and used independently?
- What is being done to let the public (broadly defined to include workers in green buildings, visitors, the general public, and others) know about program objectives and successes?
- In what ways is the process of educating and training key stakeholders evolving as the overall program evolves (i.e., as experience is gained)?

Sustainable Design Metrics

[For states incorporating LEED standards]

- In general, how is the LEED registration/certification process being used?
- Is LEED certification required? Why or why not?

- Was any consideration given to the development of state-specific standards?
 - If yes, but none were created, what was the reason?
 - If no, was the decision based on a high degree of confidence in LEED? a lack of resources to develop an alternative? something else?

[For states that have not adopted the LEED standards but have adopted their own standards (either original or LEED-based)]

- Who evaluates performance relative to the standards (i.e., who acts as the equivalent of the LEED-accredited professional)?
- Was any consideration given to the use of the LEED standards?
 - If yes, why weren't they used?
 - If no, why not?
- Would you recommend developing original metrics to other states? Why or why not?

[For all states]

- Are there any checks during the building process to ensure that construction does not stray from the green building design?
- How is post-construction performance measured and evaluated?
 - Who is responsible for documenting sustainable design "outcomes"?
 - Does the state consider a broad suite of performance measures, including indirect benefits?
 - Is there a system in place to monitor performance on a regular basis over time?
- What specific measures are being used to judge the success of a green building project (e.g., reduced energy usage, waste minimization, proportion of green materials used)?

Standards, Codes, and Regulations

- Which standards, codes, or regulations (if any) have been the greatest obstacles to the incorporation of sustainable design in public construction?
 - Have any of these obstacles been addressed in a formal manner?
- Has your state adopted new building codes or regulations aimed at incorporating green building techniques?
- Do you have an opinion on building codes, regulations, or standards in other states that should be considered "best practice" for enabling sustainable design and construction?

Capital versus Operating Budget

- Are operating costs routinely considered alongside capital costs in the context of financing public construction projects? If yes how are these costs integrated into construction budgets/projects?

- Are life cycle cost assessment methodologies used to evaluate the feasibility of a more sustainable design for public buildings?
 - If yes, what assumptions (if any) have been standardized (e.g., assessment horizon, discount rate)?
 - If yes, what mechanisms have been used to encourage/require life cycle cost assessment for public buildings?
 - What certification tools are used for acceptable LCC analysis?
- Are integrated engineering principles practiced in the design of public construction projects to reduce capital and operating costs associated with the design, construction and operation of higher performing buildings.
 - If yes, what are the approaches, tools and process associated with these principles
- What methods or best practices are different states using to fund incremental costs for design and construction projects meeting sustainable design or higher energy performance standards beyond the current ASHRAE 99-2001 building codes.

Incentives

- What incentives have been or are being used to break down barriers (real or perceived) to sustainable design in public construction?
 - Have any been particularly effective? Ineffective?
- Do any smart growth incentives exist that promote sustainable design of public buildings (e.g., siting policies)?
- Are any new incentives currently in development or under consideration?

Bidding and Awarding Process

- Do barriers associated with public bidding and awarding practices get in the way of the green building agenda?
 - What steps have been taken, if any, to remove these barriers?
- Are green design standards formally incorporated into building specifications?

General

- In quantitative terms, what progress has the state made to date (e.g., number of LEED-registered or certified buildings, number of buildings for which green designs are in development or have been put out to bid, energy savings)?
- What do you think the key tactics or strategies have been that have contributed to the state's success to date?
- If you were to provide specific recommendations to another state with respect to any of the topics we've discussed, what would they be?

APPENDIX D STATE PROGRAM CONTACTS

APPENDIX D: STATE PROGRAM CONTACTS					
STATE	CONTACT	AGENCY/FIRM	POSITION	PHONE	EMAIL
CA	Dana Papke	California Integrated Waste Management Board	(not provided)	(916) 341-6496	dpapke@ciwmb.ca.gov
CA	Barbara Van Gee	California Integrated Waste Management Board	Acting Supervisor	(916) 341-6493	bvangee@ciwmb.ca.gov
CA	Kathy Frevert	California Integrated Waste Management Board	(not provided)	(916) 341-6476	kfrevert@ciwmb.ca.gov
CA	Daniel Burgoyne	Department of General Services	Sustainability Manager	(916) 376-5010	daniel.burgoyne@dgs.ca.gov
MN	Laura Millberg	Office of Environmental Assistance	Green Building Specialist	(651) 215-0219	laura.millberg@state.mn.us
MN	Rick Carter	LHB Engineers and Architects	Project Manager, MN Sustainable Building Guidelines Consultant Team	(612) 752-6923	rick@lhpcorp.com
MN	John Carmody	University of Minnesota Center for Sustainable Building Research	Director	(612) 624-1351	carm001@umn.edu
MN	Linda Kane	State Architect's Office	Architect and Project Manager	(651) 201-2382	linda.kane@state.mn.us
NY	Craig Kneeland	New York State Energy Research and Development Authority	Senior Project Manager	(518) 862-1090 x3311	cek@nyserda.org
NY	Charle-Pan Dawson	New York State Energy Research and Development Authority	Associate Project Manager	(518) 862-1090 x3244	cad@nyserda.org
NY	Lou Cirelli	Dormitory Authority of the State of New York	Director, Quality Assurance	(518) 257-3276	lcirelli@dasny.org
NY	Anna Campas	New York Office of General Services - Design and Construction	Senior Structural Engineer	(518) 473-8769	anna.campas@ogs.state.ny.us
NY	Neill Anderson	New York State Office of Mental Health	Director, Engineering and Energy Services	(518) 473-5544	Neill.Any@aol.com
PA	Catherine Brownlee	Governor's Green Government Council	Executive Director	(717) 772-8924	cbrownlee@state.pa.us
PA	Jim Toothaker	Department of Environmental Protection, Bureau of Office Systems and Services	Director (retired)	(717) 938-3858	jstoothaker@suscom.net

APPENDIX E EXECUTIVE ORDERS AND LEGISLATION
CALIFORNIA, MINNESOTA, NEW YORK, AND PENNSYLVANIA

**EXECUTIVE ORDERS AND LEGISLATION
CALIFORNIA, MINNESOTA, NEW YORK, AND PENNSYLVANIA**

California

California Executive Order D-16-00, August 2000

http://www.governor.ca.gov/state/govsite/gov_htmldisplay.jsp?BV_SessionID=@@@1110708348.1127759627@@@&BV_EngineID=cccdaddfkigkhmdcfngcfkmdffidfng.0&sCatTitle=Previous+Administration/Exec+Order&sFilePath=/govsite/executive_orders/d1600.html&sTitl

WHEREAS, California is committed to providing leadership on energy, environmental and public health issues by implementing innovative and resource-efficient public building design practices and other state government programs that improve the lives of California's 34.5 million residents; and

WHEREAS, the state invests approximately two billion dollars (\$2,000,000,000) annually for design, construction and renovation, and more than six hundred million dollars (\$600,000,000) annually for energy, water, and waste disposal at state-funded facilities; and

WHEREAS, a building's energy, water, and waste disposal costs are computed over a twenty-five year period, or for the life of the building, and far exceed the first cost of design and construction; and

WHEREAS, an opportunity exists for the State of California to foster continued economic growth and provide environmental leadership by incorporating sustainable building practices into the state capital outlay and building management processes; and

WHEREAS, sustainable building practices utilize energy, water, and materials efficiently throughout the building life cycle; enhance indoor air quality; improve employee health, comfort and productivity; incorporate environmentally preferable products; and thereby substantially reduce the costs and environmental impacts associated with long-term building operations, without compromising building performance or the needs of future generations; and

WHEREAS, the widespread adoption of sustainable building principles would result in significant long-term benefits to the California environment, including reductions in smog generation, runoff of water pollutants to surface and groundwater sources, the demand for energy, water and sewage treatment services, and the fiscal and environmental impacts resulting from the expansion of these infrastructures; and

WHEREAS, it is critical that my Administration provide leadership to both the private and public sectors in the sustainable building arena;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby establish a state sustainable building goal and issue this order to become effective immediately:

The sustainable building goal of my administration is to site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of

energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long-term benefits to Californians.

The Secretary for State and Consumer Services (hereinafter referred to as "the Secretary") shall facilitate the incorporation of sustainable building practices into the planning, operations, policymaking, and regulatory functions of State entities. The objectives are to implement the sustainable building goal in a cost effective manner, while considering externalities; identify economic and environmental performance measures; determine cost savings; use extended life cycle costing; and adopt an integrated systems approach. Such an approach treats the entire building as one system and recognizes that individual building features, such as lighting, windows, heating and cooling systems, or control systems, are not stand-alone systems.

In carrying out this assignment, the Secretary shall broadly consult with appropriate private sector individuals and public officials, including the Director of the Department of Finance; the Secretary of Business, Transportation, and Housing; the Secretary for Education; the Secretary for Environmental Protection; the Secretary of Health and Human Services; and the Secretary for Resources. The Secretary shall submit a report to the Governor within six months of the date of this order, containing a recommended strategy for incorporating sustainable building practices into development of State facilities including leased property.

Thereafter, on an annual basis, the Secretary shall report on the activities and on the efforts of all State entities under the Governor's jurisdiction to implement the Governor's sustainable building strategy. The Secretary shall devise a method for compiling such information and reporting it to the Governor and the Legislature.

All State entities under the Governor's jurisdiction shall cooperate fully with the Secretary and provide assistance and information as needed. The Regents of the University of California, Boards of Governors of Community College Districts, Trustees of the California State Universities, the State Legislature, and all Constitutional Officers are encouraged to comply with the Executive Order.

Nothing in this Order shall be construed to confer upon any state agency decision-making authority over substantive matters within another agency's jurisdiction, including any informational and public hearing requirements needed to make regulatory and permitting decisions.

California Executive Order S-20-04, December 2004:

http://www.governor.ca.gov/state/govsite/gov_htmldisplay.jsp?sCatTitle=Exec+Order&sFilePath=/govsite/executive_orders/20041214_S-20-04.html&sTitle=Executive+Order+S-20-04

WHEREAS, the Energy Action Plan adopted by the state's energy agencies places conservation and energy efficiency first in the loading order of energy resources because they are the least expensive and most environmentally protective resources; and

WHEREAS, commercial buildings use 36 percent of the state's electricity and account for a large percentage of greenhouse gas emissions, raw materials use and waste; and

WHEREAS, the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), the nation's leading green building rating system, promotes "high performance" building practices; energy, water and materials conservation; environmentally preferred products and practices; improvements in employee health, comfort and productivity; and reductions in facility operation costs and environmental impacts; and

WHEREAS, electricity costs for California's commercial and institutional buildings exceed \$12 billion per year, and cost-effective efficiency practices outlined in this Order can save more than \$2 billion per year; and

WHEREAS, the state's own buildings consume over \$500 million of electricity per year, and the measures outlined in this Order can save California taxpayers \$100 million per year; and

WHEREAS, high-performance schools also reduce energy and resource consumption, while creating safer and healthier learning environments; and

WHEREAS, investments in energy efficiency measures provide high returns on investment and boost California's economy, creating more jobs, local spending and tax revenue.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power vested in me by the Constitution and statutes of the State of California, do hereby order effective immediately:

1. That the state commit to aggressive action to reduce state building electricity usage by retrofitting, building and operating the most energy and resource efficient buildings by taking all cost-effective measures described in the Green Building Action Plan for facilities owned, funded or leased by the state and to encourage cities, counties and schools to do the same.

2. That state agencies, departments, and other entities under the direct executive authority of the Governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20% by 2015, through cost-effective efficiency measures and distributed generation technologies; these measures should include but not be limited to:

- 2.1. Designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings; and

- 2.2. Identifying the most appropriate financing and project delivery mechanisms to achieve these goals; and

- 2.3. Seeking out office space leases in buildings with a U.S. EPA Energy Star rating; and

2.4. Purchasing or operating Energy Star electrical equipment whenever cost-effective.

3. The Division of the State Architect in the Department of General Services should adopt guidelines by December 31, 2005, to enable and encourage schools built with state funds to be resource and energy efficient.

4. That the California Public Utilities Commission (CPUC) is urged to apply its energy efficiency authority to support a campaign to inform building owners and operators about the compelling economic benefits of energy efficiency measures; improve commercial building efficiency programs to help achieve the 20% goal; and submit a biennial report to the Governor commencing in September 2005, on progress toward meeting these goals.

5. That the California Energy Commission (CEC) propose by July 2005, a benchmarking methodology and building commissioning guidelines to increase energy efficiency in government and private commercial buildings.

6. That the CEC undertake all actions within its authority to increase efficiency by 20% by 2015, compared to Titles 20 and 24 non-residential standards adopted in 2003; collaborate with the building and construction industry state licensing boards to ensure building and contractor compliance; and promptly submit its report as per Assembly Bill 549 (Statutes of 2001) on strategies for greater energy and peak demand savings in existing buildings.

7. The California Public Employees Retirement System and State Teachers Retirement System are requested to target resource efficient buildings for real estate investments and commit clean technology funds to advanced sustainable and efficiency technologies.

8. Other entities of state government not under the Governor's direct executive authority, including the University of California, California State University, California Community Colleges, constitutional officers, legislative and judicial branches, and CPUC, are requested to actively participate in this effort.

9. Nothing in this Order shall be construed to confer upon any state agency decision-making authority over substantive matters within another agency's jurisdiction, including any informational and public hearing requirements needed to make regulatory and permitting decisions.

10. Commercial building owners are also encouraged to take aggressive action to reduce electricity usage by retrofitting, building and operating the most energy and resource efficient buildings by taking measures described in the Green Building Action Plan.

11. This Order is not intended to, and does not create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees, or any other person.

12. That as soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice shall be given to this Order.

Minnesota

Minnesota Energy Security and Reliability Act, 2001, Sections 2 and 3

<http://www.revisor.leg.state.mn.us/bin/bldbill.php?bill=S0722.3&session=ls82>

Sec. 2. [16B.325] [SUSTAINABLE BUILDING GUIDELINES.]

The department of administration and the department of commerce, with the assistance of other agencies, shall develop sustainable building design guidelines for all new state buildings by January 15, 2003. The primary objectives of these guidelines are to ensure that all new state buildings initially exceed existing energy code, as established in Minnesota Rules, chapter 7676, by at least 30 percent. The guidelines must focus on achieving the lowest possible lifetime cost for new buildings and allow for changes in the guidelines that encourage continual energy conservation improvements in new buildings. The design guidelines must establish sustainability guidelines that include air quality and lighting standards and that create and maintain a healthy environment and facilitate productivity improvements; specify ways to reduce material costs; and must consider the long-term operating costs of the building, including the use of renewable energy sources and distributed electric energy generation that uses a renewable source or natural gas or a fuel that is as clean or cleaner than natural gas. In developing the guidelines, the departments shall use an open process, including providing the opportunity for public comment. The guidelines established under this section are mandatory for all new buildings receiving funding from the bond proceeds fund after January 1, 2004.

Sec. 3. [BENCHMARKS FOR EXISTING PUBLIC BUILDINGS.]

The department of administration shall maintain information on energy usage in all public buildings for the purpose of establishing energy efficiency benchmarks and energy conservation goals. The department shall report preliminary energy conservation goals to the chairs of the senate telecommunications, energy and utilities committee and the house regulated industries committee by January 15, 2002. The department shall develop a comprehensive plan by January 15, 2003, to maximize electrical and thermal energy efficiency in existing public buildings through conservation measures having a simple payback within ten to 15 years. The plan must detail the steps necessary to implement the conservation measures and include the projected costs of these measures. The owner or operator of a public building subject to this section shall provide information to the department of administration necessary to accomplish the purposes of this section.

New York

Executive Order 111, June 10, 2001

Directing State Agencies To Be More Energy Efficient And Environmentally Aware "Green And Clean State Buildings And Vehicles"

http://www.gorr.state.ny.us/eo111_fulltext.htm

WHEREAS, New York is dedicated to the mutually compatible goals of environmental protection and economic growth;

WHEREAS, New York has adopted measures designed to allow energy markets to operate more competitively and has significantly reduced taxes in order to reduce energy costs and encourage continued economic growth;

WHEREAS, the generation and use of energy has a significant impact on the environment, contributing to emissions of sulfur dioxide, nitrogen oxides, greenhouse gases, and other pollutants;

WHEREAS, State government is a major consumer of energy, spending approximately \$300 million per year and purchasing approximately 1500 new vehicles annually with a concomitant impact on the environment; and

WHEREAS, it is appropriate that State government assume a leadership role in promoting the efficient use of energy and natural resources in the interest of the long-term protection and enhancement of our environment, our economy, and the health of our children and future generations of New Yorkers.

NOW, THEREFORE, I, GEORGE E. PATAKI, Governor of the State of New York, by virtue of the authority vested in me by the Constitution and Laws of the State of New York, do hereby order as follows:

I. New Energy Efficiency Goals.

All agencies and departments over which the Governor has Executive authority, and all public benefit corporations and public authorities the heads of which are appointed by the Governor (hereinafter referred to as "State agencies and other affected entities"), shall seek to achieve a reduction in energy consumption by all buildings they own, lease or operate of 35 percent by 2010 relative to 1990 levels. All state agencies and other affected entities shall establish agency-wide reduction targets and associated schedules to reach this goal and shall also be responsible for establishing peak electric demand reduction targets for each state facility by 2005 and 2010. No buildings will be exempt from these goals except pursuant to criteria to be developed by the New York State Energy Research and Development Authority ("NYSERDA"), in consultation with the Division of the Budget ("DOB"), the Office of General Services ("OGS") and the Advisory Council on State Energy Efficiency ("Advisory Council") as established herein.

II. State Buildings Energy Efficiency Practices.

A. Existing Buildings.

Effective immediately, State agencies and other affected entities shall implement energy efficiency practices with respect to the operation and maintenance of all buildings that they own, lease or operate.

Such practices may include, but shall not be limited to:

- (1) shutting off office equipment when it is not being used;
- (2) adjusting the setting of space temperatures;
- (3) turning off lighting in unoccupied areas;
- (4) inspecting and re-commissioning or re-tuning heating, air conditioning and ventilation equipment to ensure optimal performance; and
- (5) cycling and restarting equipment on a staggered basis to shed electricity loads and minimize peak electricity demand usage. State agencies and other affected entities shall strive to meet the ENERGY STAR building criteria for energy performance and indoor environmental quality in their existing buildings to the maximum extent practicable.

Within 180 days of the date of this Executive Order, NYSERDA shall develop guidelines to help agencies and other affected entities implement energy efficiency practices in their buildings.

B. New Buildings and Substantial Renovation of Existing Buildings.

In the design, construction, operation and maintenance of new buildings, State agencies and other affected entities shall, to the maximum extent practicable, follow guidelines for the construction of "Green Buildings," including guidelines set forth in Tax Law § 19, which created the Green Buildings Tax Credit, and the U.S. Green Buildings Council's LEED rating system. Effective immediately, State agencies and other affected entities engaged in the construction of new buildings shall achieve at least a 20 percent improvement in energy efficiency performance relative to levels required by the State's Energy Conservation Construction Code, as amended. For substantial renovation of existing buildings, State agencies and other affected entities shall achieve at least a ten percent improvement. State agencies and other affected entities shall incorporate energy-efficient criteria consistent with ENERGY STAR and any other energy efficiency levels as may be designated by NYSERDA into all specifications developed for a new construction and renovation.

III. Procurement of Energy-Efficient Products.

Effective immediately, State agencies and other affected entities shall select ENERGY STAR energy-efficient products when acquiring new energy-using products or replacing existing equipment. NYSERDA shall adopt guidelines designating target energy efficiency levels for those products for which ENERGY STAR labels are not yet available.

IV. Purchase of Power from Renewable Sources.

State agencies and other affected entities with responsibility for purchasing energy shall increase their purchase of energy generated from the following technologies: wind, solar thermal, photovoltaics, sustainably managed biomass, tidal, geothermal, methane waste and fuel cells. State agencies and other affected entities shall seek to purchase sufficient quantities of energy from these technologies so that 10 percent of the overall annual electric energy requirements of buildings owned, leased or operated by State agencies and other affected entities will be met through these technologies by 2005, increasing to 20 percent by 2010. No agency or affected entity will be exempt from these goals except pursuant to criteria to be developed by NYSERDA, in consultation with DOB, OGS and the Advisory Council.

V. Procurement of Clean Fuel Vehicles.

State agencies and other affected entities shall procure increasing percentages of alternative-fuel vehicles, including hybrid-electric vehicles, as part of their annual vehicle acquisition plans. By 2005, at least 50 percent of new light-duty vehicles acquired by each agency and affected entity shall be alternative-fueled vehicles, and by 2010, 100 percent of all new light-duty vehicles shall be alternative-fueled vehicles, with the exception of specialty, police or emergency vehicles as designated by DOB. State agencies and other affected entities that operate medium- and heavy-duty vehicles shall implement strategies to reduce petroleum consumption and emissions by using alternative fuels and improving vehicle fleet fuel efficiency.

VI. Role of NYSERDA and Creation of the Advisory Council on State Energy Efficiency.

NYSERDA shall coordinate implementation of this Executive Order and shall assist each agency and affected entity in the fulfillment of the responsibilities imposed herein in a cost-effective manner. To assist NYSERDA in fulfilling the requirements imposed by this Executive Order, there is hereby established an Advisory Council on State Energy Efficiency consisting of the following members, who shall serve ex officio:

- the President of NYSERDA;
- the Director of the Division of the Budget;
- the Commissioners of OGS,
- the Department of Environmental Conservation,
- the Department of Correctional Services,
- the Office of Mental Health and
- the Department of Transportation;
- the Chairman of the Public Service Commission;

- the Chancellor of the State University of New York;
- the Secretary of State;
- the Chairman of the New York Power Authority;
- the Chairman of the Metropolitan Transportation Authority;
- the Executive Director of the Dormitory Authority;
- and the President of the Long Island Power Authority.

The President of NYSERDA shall serve as the chair of the Advisory Council. The members of the Advisory Council may designate one or more persons to act as their designee(s). The Advisory Council shall meet regularly, but no less than twice a year, for the purpose of advising NYSERDA as to how it can best assist state agencies and other affected entities in achieving the goals of this Executive Order with the greatest degree of cooperative effort and effectiveness. Members of the Advisory Council shall receive no compensation but shall be entitled to reimbursement for any necessary expenses incurred in connection with the performance of their responsibilities.

VII. Assistance and Cooperation.

Every agency and department over which the Governor has executive authority, and all public benefits corporations and public authorities the heads of which are appointed by the Governor, shall provide all reasonable assistance and cooperation requested by NYSERDA and the Advisory Council for the purpose of carrying out this order. Such assistance may include the assignment of staff and the provision of support services.

VIII. Participation of other governmental entities.

Local governments and school districts that are not subject to the requirements of this Executive Order are encouraged to review their energy efficiency practices and procedures, to institute appropriate operational and maintenance modifications, and to accelerate the implementation of energy efficiency projects. NYSERDA, OGS, the New York Power Authority and the Long Island Power Authority are hereby directed to offer any assistance as may be appropriate to assist local governments and school districts to achieve the goals of this Executive Order, including, but not limited to, assistance with procurement.

IX. Repeal of Prior Executive Order.

Executive Order No. 132, promulgated on January 2, 1990, and continued unamended and unmodified, is hereby revoked and superseded by this Executive Order as of the date hereof.

Pennsylvania

Pennsylvania Executive Order, 1998-1: Governor's Green Government Council, March 25, 1998

<http://www.oa.state.pa.us/oac/cwp/view.asp?A=351&Q=117736>

WHEREAS, the Constitution of the Commonwealth declares that the people of the Commonwealth have the right to clean air, pure water, and the preservation of the natural, scenic, historic, and aesthetic values of the environment; that Pennsylvania's public natural resources are the common property of all the people, including generations yet to come; and that the Commonwealth, as trustee of these resources, shall conserve and maintain them for the benefit of all the people (Pa. Const. Art. I, § 27); and

WHEREAS, Pennsylvania's economy, health and safety, and quality of life of its citizens are dependent on the careful stewardship of resources, a healthy economy and the development of technologies to enable economic growth while improving the Commonwealth's environment; and

WHEREAS, the Commonwealth has long recognized its own responsibility for cleaning up Pennsylvania's environment, specifically under *Executive Order 1973-9, Environmental Protection by State Agencies*, which addresses compliance by all agencies with environmental laws and regulations and minimizing pollution in building design and construction, and *Executive Order 1980-3, Life Cycle Costing*, which requires agencies to use life cycle costing for building construction and major equipment acquisition; and

WHEREAS, in January 1996, Pennsylvania established the Office of Pollution Prevention and Compliance Assistance within the Department of Environmental Protection to spear-head efforts to assist Pennsylvania's businesses and industries to achieve economic savings while improving environmental quality; and

WHEREAS, Commonwealth agencies can demonstrate their commitment to improving the environment by using Strategic Environmental Management to realize economic savings and environmental enhancement; and

WHEREAS, with the approach of the twenty-first century, the Commonwealth's government needs to join Pennsylvania business and industry in shifting its environmental expectations beyond compliance toward the goal of zero emissions achieved through pollution prevention and energy efficiency; and

WHEREAS, Commonwealth agencies, through their management practices, can have quantifiable, positive environmental, and economic impacts;

NOW, THEREFORE, I, Thomas J. Ridge, Governor of the Commonwealth of Pennsylvania, by virtue of the authority vested in me by the Constitution of the Commonwealth of Pennsylvania

and other laws, do hereby establish the **Governor's Green Government Council** (hereinafter referred to as "Council").

1. Purpose of the Council. The purpose of the Council is to, cooperatively across agency jurisdictions, facilitate the incorporation of environmentally sustainable practices, including Strategic Environmental Management, into Commonwealth government's planning, operations, and policymaking and regulatory functions, and to strive for continuous improvement in environmental performance with the goal of zero emissions. Strategic Environmental Management includes an environmental management system with a strong pollution prevention and energy efficiency program, effective community involvement, measurable economic and environmental performance goals, environmental accounting, and life cycle analysis.

2. Responsibilities of the Council.

a. The Council is responsible for providing advice and assistance in the preparation and review of agency Green Plans and the implementation of initiatives undertaken to fulfill these plans.

b. The Council is responsible for providing advice and assistance in prioritizing initiatives undertaken to incorporate environmentally sustainable practices into Commonwealth government's planning, operations, policymaking, and regulatory functions and to strive for continuous improvement in environmental performance with the goal of zero emissions.

3. Composition of the Council. The Council shall consist of the following members, each of whom shall be appointed by and serve at the pleasure of the Governor:

a. The Secretaries of the Departments of Environmental Protection and General Services, who shall chair the Council jointly.

b. Such other individuals as the Governor shall appoint.

c. Independent agencies shall be invited and encouraged to participate fully in the Council's efforts to foster the incorporation of environmentally sustainable practices throughout Commonwealth government.

4. Responsibilities of Commonwealth Agencies.

a. Each executive agency, and all independent agencies participating voluntarily in this initiative, shall develop an annual plan, to be known as a Green Plan, outlining the actions the agency will take in the coming year to incorporate environmentally sustainable practices into its planning, operations, policymaking, and regulatory functions and to strive for continuous improvement in environmental performance with the goal of zero emissions. The Green Plan will also include the measures to be used to evaluate the effectiveness of the agency's actions. To facilitate their incorporation into the annual budget process, these plans shall be submitted to the Council for advice and assistance on or before June 1 of each year.

b. Each agency shall assign a deputy secretary or individual in an equivalent position to be responsible to the agency head for overseeing agency activity directed toward incorporating environmentally sustainable practices into the agency's management and operations.

c. Each agency shall identify a Green Team Leader responsible for assuring the development and implementation of the agency's activities to incorporate environmentally sustainable practices into their management and operations and assign resources, as necessary, to support them.

d. Initially, participating Commonwealth agencies shall focus on planning and operations, particularly energy efficiency, including building design and management, procurement of environmentally friendly commodities and services, vehicle purchases and management, and recycling.

e. All agencies under the Governor's jurisdiction shall cooperate fully with the Council and provide staff assistance and information as needed for the Council to carry out its functions effectively.

5. Responsibility of the Department of Environmental Protection. The Department of Environmental Protection shall assemble the individual agencies' Green Plans and submit them, together with an executive summary, including a progress report, to the Governor on or before September 1 of each year.

6. Cooperation with other Commonwealth entities. The Council shall cooperate with other Commonwealth entities, including but not limited to, the 21st Century Environment Commission; the Privatize, Retain, Innovate, Modify and Eliminate Initiative (PRIME); and the Governor's Market Development Task Force for Recycled Materials. The Council shall use information from these entities in developing the Commonwealth's Green Plan and shall, in turn, provide them with information.

7. Environmental Compliance. All Commonwealth agencies shall ensure that their government facilities and activities comply with all applicable federal and Commonwealth environmental laws and regulations. Source reduction and resource efficiency, including energy efficiency, shall, where feasible, be used to achieve compliance.

8. Funding. Each agency shall provide sufficient funds to develop and implement its Green Plan.

9. Effective Date. This order shall take effect immediately.

10. Termination Date. This order shall remain in effect unless revised or rescinded by the Governor.

Pennsylvania Executive Order 2004-12: Energy Management and Conservation in Commonwealth Facilities, December 15, 2004

<http://www.oa.state.pa.us/oac/cwp/view.asp?A=351&Q=196122>

- WHEREAS, the cost of energy continues to rise and traditional sources of non-renewable energy continue to be depleted at a rapid pace; and
- WHEREAS, the Commonwealth is a leading consumer of energy throughout Pennsylvania; and
- WHEREAS, the Commonwealth must demonstrate leadership in the conservation of energy by reducing the amount of energy we consume in our own facilities; and
- WHEREAS, the Department of General Services has the primary responsibility for the operation of Commonwealth-owned buildings in Harrisburg and is the primary operational agency of the Commonwealth; and
- WHEREAS, the Department of Environmental Protection has substantial expertise in the conservation of energy and effective energy management techniques; and
- WHEREAS, the Executive Agencies of the Commonwealth are primarily responsible for energy management and conservation in the buildings they occupy; and
- WHEREAS, all Executive Agencies must work together to conserve energy and reduce energy usage; and
- WHEREAS, the Commonwealth currently lacks a unified approach to energy management and conservation in Commonwealth facilities; and
- WHEREAS, maximum efficiency in energy management and conservation is best achieved through the implementation of a centralized energy strategy coordinated through a single agency.

NOW, THEREFORE, I, Edward G. Rendell, Governor of the Commonwealth of Pennsylvania, by virtue of the authority vested in me by the Constitution of the Commonwealth of Pennsylvania and other laws, do hereby issue the following *Executive Order*.

1. Responsibilities.

a. The Department of General Services shall act as the centralized coordinator of the Commonwealth's energy management and conservation measures in Commonwealth facilities for the Executive Agencies. In this role, General Services shall:

(1) Work with all agencies of the Commonwealth on effective methods to include energy conservation as part of any new construction project or renovation project, by way of

Green Building Practices or otherwise, and work collectively to track and monitor the results of such energy conservation methods.

(2) Apply Life Cycle Cost Analysis to the selection of energy sources, systems, and controls for all new construction projects and renovation projects.

(3) Implement programs to train appropriate personnel in Life Cycle Cost Analysis.

(4) Act as the centralized authority for all Energy Service Company (ESCO) Projects implemented by the Executive Agencies. In this role, General Services shall:

(a) act as the approving authority for all ESCO Projects requested by the Executive Agencies;

(b) develop standard procedures by which ESCO Projects may be awarded;

(c) develop a comprehensive approach to ESCO Projects applicable to all Executive Agencies;

(d) provide advisory services and guidance to the Executive Agencies for the conception and implementation of ESCO Projects; and

(e) seek to develop and implement a single financing source for all ESCO Projects.

(5) Develop procedures to reduce energy use in all leased facilities, including the possible centralized purchasing of energy for Commonwealth leases and including energy conservation measures in lease specifications.

(6) Procure Energy Star® and other energy efficient products where economical and consistent with Life Cycle Cost Analysis.

(7) Research new and innovative methods of energy conservation.

(8) Benchmark best practices for energy conservation technologies with other public and private sector organizations.

b. The Department of General Services and all other Executive Agencies shall:

(1) Develop no-cost or low-cost energy conservation measures for all Commonwealth-owned and leased buildings. Such measures should include, at a minimum, the following:

(a) the reduction of energy use during Peak Demand Periods;

(b) measures to ensure that lighting systems are turned off during non-operating hours;

(c) conversion to more energy efficient lighting systems and bulbs as existing systems and bulbs reach the end of their life cycles;

(d) maximum use of natural lighting whenever possible and consistent with temperature control;

(e) measures to ensure that HVAC systems operate at reduced levels during non-operating hours;

(f) measures to ensure that all equipment powered by electricity, including computer equipment, is turned off when not in use and that personal computers go into "sleep" mode after five minutes of inactivity;

(g) temperature reduction for hot-water heaters in all facilities except where operational needs require a specific water temperature;

(h) the removal of lighting from all vending machines in lighted areas;

(i) the removal or reduction of all other non-essential lighting;

(j) maximum use of task lighting;

(k) the setting of refrigerators to the highest possible temperature;

(l) the prohibition of personal space heaters except in areas where central HVAC systems cannot provide adequate heat under objective standards;

(m) insulation of all hot water or steam pipes and hot water heaters;

(n) replacement of conventional light switches with motion-sensor switches;

(o) replacement of incandescent lights in exit signs with LED fixtures;

(p) maximum use of more energy efficient office equipment and turning off personal computers, printers, and other office equipment during non-business hours;

(q) frequent cleaning of light fixtures;

(r) frequent cleaning and maintenance of HVAC systems and routine replacement of filters;

(s) improved insulation of windows, doors, walls, roofs, floors, and sealing of ductwork;

(t) the closing of all windows during heating and cooling periods.

(2) Develop additional energy conservation methods based upon their individual operational missions.

(3) Designate facilities managers with primary responsibility to ensure that energy conservation measures are developed and complied with.

(4) Engage janitorial crews and security forces in the implementation of energy conservation measures.

(5) Continue to explore the use of ESCO Projects, Energy Star® products, Green Building Practices, and other similar energy conservation measures and implement such programs where appropriate.

(6) Explore re-commissioning or other adjusting of HVAC systems to ensure maximum efficiency.

(7) Develop a long-range energy use and conservation plan for each Executive Agency.

(8) Develop programs to educate and train employees in energy conservation methods.

c. Executive Agencies shall within 180 days of the date of this order, file a report with the Department of General Services setting forth all measures taken to implement the requirements of this order.

d. The Department of Environmental Protection shall:

(1) Provide advice and assistance to General Services and Executive Agencies in developing the energy management and conservation requirement of this order.

(2) On a continuing basis, develop and recommend additional no-cost or low-cost energy conservation measures to be implemented by General Services and the Executive Agencies.

(3) Develop long-range energy management and conservation methods to be applied in Commonwealth facilities.

e. The Office of Administration shall ensure that specific energy management responsibilities are incorporated into relevant job descriptions in all Executive Agencies.

2. Cooperation Among Executive Agencies and independent agencies. The Department of General Services may request and receive from any Executive Agency such

cooperation, information, and data needed to properly implement the intent of this order. Independent agencies not directly under the Governor's jurisdiction are also encouraged to participate in the provisions of this order.

3. Definitions. As used in this order, these terms shall have the following meanings:

a. Energy Star® Products. Those products that have been designated as such by the U. S. Environmental Protection Agency or the U. S. Department of Energy and therefore use less energy, save money, and help protect the environment.

b. Energy Service Company (ESCO) Project. A guaranteed energy savings contract, as defined in 73 *P. S. §§ 1646.1 – 1646.7*, providing for the acquisition of comprehensive capital energy improvements and services provided by qualified Energy Service Companies where the energy and cost savings achieved by the installed energy project cover all project costs, including financing, over a specified contract term.

c. Executive Agencies. Those agencies as defined in 62 *Pa. C. S. § 103*.

d. Green Building Practices. Techniques that promote construction of buildings that are healthier for both the environment and the occupants through a variety of methods, including energy and water conservation, environmentally sensitive site planning, the use of resource efficient building materials, and superior indoor environmental quality.

e. Life-Cycle Cost Analysis. A methodology for calculating the whole cost of a system from inception to disposal.

f. Peak Demand Periods. The times during a given day when energy use is at its highest and costs are greatest, particularly afternoons on hot days.

4. Effective Date. This order shall take effect immediately.

5. Termination Date. This order shall remain in effect unless revised or rescinded by the Governor.